CURRENT LITERATURE.

A Californian Manual.[1]

It has long been recognized that the flora of the Pacific coast is a wonderfully rich one, and that detailed exploration is almost daily bringing to light new plant forms. It has also been a matter of regret that no handy manual brought even an outline knowledge of this flora within reach of those to whom botanical libraries are not accessible. The "Botany of California," in two large volumes, is a monument to the generosity of certain citizens of that state, and it formed a fitting foundation for study; but it is both costly and hard to get, and is now far from expressing our knowledge. Keen collectors have been plentiful upon the Pacific coast, and it seemed hardly worth while to prepare a manual which must of necessity be incomplete before it could get through the press. The most indefatigable student of this flora has been Professor Greene, as his numerous publications will testify. His "Flora Franciscana," appearing in parts, is already well known, and now he has presented a manual of the same region for the benefit of the schools and colleges, and all students desiring "to make some beginnings in the systematic botany of middle western California." But nine counties are included, and ninety natural orders of flowering plants, the sedges and grasses being notable omissions, and the indications are that a complete manual of the whole state would be a huge affair. The author's purpose is most commendable, and we do not doubt that the book will be a great boon to beginning students in the "Bay-Region." Besides, no botanist has so intimate a knowledge of the flora of the region presented, and hence no one is so well fitted to act as guide.

Our only criticism is from the standpoint of the professional botanist. Professor Greene says that "there is much that is new for the bibliographer and the nomenclator within these pages;" also that "this feature will not in the least affect the usefulness of the manual as a book for beginners;" but that "the inconvenience will be realized only by the experienced botanist." We heartily agree with all three of these propositions, especially the first and last, for there is very much that is new for the bibliographer, and it is the most inconvenient book for the experienced botanist that it has been our fortune to examine. Knowing how thoroughly the author appreciates

[1] GREENE, EDWARD LEE.—Manual of the Botany of the Region of San Francisco Bay. 8vo. pp. xiii, 328. San Francisco, 1894.

the value of frank criticism, of which he has become so distinguished an exponent, we venture to confess ourselves discouraged by this book. It gives one so constantly the impression of straining after changes, that we find it hard to rid ourselves of the impression. One expects a reasonable amount of this in generic and specific combinations, for we can hardly move without jostling these; but when it attacks ordinal names, sequence, everything, it makes one wonder how very completely all other botanists have gone astray. Possibly this impression may wear off. The very great inconvenience of the book to the professional botanist is the entire omission of synonyms. It can hardly be expected that a botanist in these days can carry in his head all the permutations of nomenclature, for it would be as impossible and about as profitable as to remember the daily weather reports; and it also cannot be expected that he will have time to look up the synonymy in various publications. This seems to us a more serious defect than the omission of an index. Our feeling of discouragement, however, chiefly arises while contemplating the generic names and their reference. It seems to us that if Galen, and Theophrastus, and Vergil, and Pliny, *et id omne genus*, are to be consulted for generic names, bibliography at once becomes an impossibility and systematic botany the common dumping ground for all literature. There is no reason why the wonderful Semitic libraries should not add their clay volumes to the confusion, for they indicate and name many a plant that has been clearly identified. We are very glad that the author has said that "no botanist will be obliged to adopt the nomenclature of the Manual of Bay-Region Botany," and we sincerely hope that they will follow this wise caution. Of course, he means to say that if we do not like it we can say so, a privilege of which we are glad to avail ourselves, and we therefore enter our protest against this use of pre-Linnæan names. We ourselves have participated in revolutions of nomenclature in the interest of peace, and not that one revolution may simply be the prelude to another. We have thought that one thorough resurrection of names since systematic botany became a science might be necessary to their permanent burial decently and in order, but we do not expect to be parties to a perennial resurrection. Highly as we esteem Professor Greene we cannot just now follow him any further in this ghoulish business, and we trust that he will understand that we have deserted him, not for his own sake, but on account of the company he keeps.

Revision of Guttiferæ.[1]

This latest volume of a series of famous monographs, which form a continuation of the *Prodromus*, is the last one to bear the name of Alphonse De Candolle. In a prefatory note the son, Casimir, promises that the third generation will continue the work on the same plan. The volume is also interesting because M. Vesque has made large use of minute anatomical characters, including them everywhere in his descriptions. In the preface the author discusses the value of such characters and emphasizes the importance of their increasing use in recent systematic work. The limitation of the family is along the old lines, the *Hypericaceæ* and certain genera of *Ternstroemiaceæ*, which are included by Engler in *Die Natürlichen Pflanzenfamilien*, being excluded. The *Hypericaceæ* are not excluded on the basis of the distribution of resiniferous canals, as suggested by Van Tieghem, but are regarded as entirely distinct on many grounds, strikingly so in minute characters. For instance, the hairs, the stomata, the oxalate crystals, all oppose such union. The stomata of *Guttiferæ* are constantly of the rubiaceous type, that is, with two accessory cells parallel with the cleft; while those of *Hypericaceæ* are as constantly of the cruciferous type. Such work is to be expected of M. Vesque, who sees in minute anatomical structures the same principles of evolution developed, indicating genetic relationships, that we have been accustomed to apply only in gross structures. Under each species the two sets of characters are distinctly separated, his "epharmosis" giving a compact account of the histological peculiarities. One cannot but feel amazement at the immense amount of work such treatment involves. This great tropical family, of which the large tribe *Clusieæ* is exclusively American, is represented in this monograph by 495 species, forty of which bear the name of M. Vesque as author. The three large genera are *Garcinia* of tropical Asia and Africa, with 186 species; *Clusia*, of tropical America, with ninety-six species; and *Calophyllum*, of the tropics in general, with sixty-four species.

A curious and quite effective method of presentation is used in the discussion as to the value of "epharmonic" characters, in relation to the large stress put upon the development of the hypoderma. Two botanists, A and B, are represented as debating the question and taking opposite views. Naturally A, who adopts the value of "epharmonic" characters, easily prevails over the opposing B.

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[1] Vesque, J.—Monographiæ Phanerogamarum, etc., Alphonse and Casimir DeCandolle editors, Vol. VIII, Guttiferæ. 8vo. pp. 670. Paris: G. Masson. Dec. 1893.

The biology of ferns.[1]

We are somewhat puzzled to discover from what point of view we should criticise this book. To classify it is difficult. It is strictly neither a student's handbook nor a treatise, but something of a combination of these. Nor is it sufficiently either one or the other to demonstrate clearly its *raison d'être*. We have asked ourselves how we could use it; and the answer seems to be that it will be convenient to have the figures and the facts it contains in one book instead of in several; to have some fresh illustrations, instead of those already familiar; and to have some concrete directions for collodion imbedding to supplement the general and comprehensive ones.

By this we do not mean to imply that the book is merely a compilation, for the author and his pupils have done a large amount of (in a sense) original work for it; yet there is not much in it that is really new. Nevertheless it has ample value to assure it a wide welcome in botanical laboratories.

The book hardly seems to justify its title, if we understand it; for it treats not of the biology of ferns (which, we take it, cannot be studied by the "collodion method"), but of the morphology and comparative anatomy of ferns. In chapter I of the first part, Professor Atkinson describes succinctly the development of the gametophyte and its sexual organs. He then devotes three chapters to the development, morphology and anatomy of the stem, root, and leaves of the sporophyte, and two to its sporangia. Chapter VII discusses the substitutionary growths from sporophytic and gametophytic budding, apogamy and apospory, while VIII is devoted to an account of the Ophioglosseæ. Part II treats of the technique of collodion imbedding and cutting, raising prothallia, etc., and contains directions for study. A bibliography follows, listing the most important papers, which, however, are not directly cited in the text.

All of the figures are original, most of them are excellent, and some are extraordinarily fine, notably 49, 139 and 140. A very few are distinctly bad, as 57, 58, 59. Fig. 131 is obscure and might do duty for a diagram of a cyclone. Figs. 19–23 and 25–27 were apparently left unfinished accidentally, lacking the outline of the cell walls. It would seem better to put the initials of the artist at one side than to incorporate them with the tissues themselves. Nor can we quite see the use of drawing a scale with each figure unless the figure and the scale are magnified to the same degree. In every case where magnification is

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[1] ATKINSON, GEORGE F.—The study of the biology of ferns by the collodion method; for advanced and collegiate students. 8vo. pp. xii. 134. figs. 163. New York: Macmillan & Co. 1894.

shown it is stated in this form: "magnified 30 times more than the scale; scale=1^{mm}." Why not, "magnified x diameters;" or "scale .05^{mm}", drawing the latter with the same lenses as figure?

The book is gotten up in luxurious style, with heavy paper, wide margins and large type.

Minor Notices.

FOLLOWING his revision of our N. Am. species of Epilobium, Dr. William Trelease now presents, in his careful and thorough way, a revision of the small genera Gayophytum and Boisduvalia, six species of the former and four of the latter. Each species is illustrated by a plate showing general habit and dissections. These genera are peculiar to our western mountain region, and are also found in corresponding regions of S. America, but seem to be entirely wanting between. Dr. Trelease thinks that the indications are in favor of a former continuous distribution along the backbone of both North and South America. Gayophytum closely resembles the *paniculatum* group of Epilobium, and Boisduvalia was merged with Œnothera by Bentham & Hooker. The material is much confused in our herbaria, and this paper will do good service in helping us to proper identifications.

AN INTERESTING SYLLABUS of a course of lectures in biology has been issued by Dr. D. W. Dennis,[1] Professor of biology in Earlham College, (Richmond, Ind.). It is said of Oliver Wendell Holmes that he makes even an index attractive reading. A like ability is apparent in the present work, for the usual dryness of an outline of scientific lectures is relieved by the suggestive form of the topics, the numerous illustrative quotations and the range of the implied applications. The use of the word biology is also to be commended, as embracing the different fields of biologic science in a reasonably just proportion.

DR. J. W. MOLL describes[2] an oven for drying herbarium specimens rapidly. The apparatus is a double-walled oven with burners controlled by a thermostat. The chief novelty, however, consists in the use of corrugated paper, such as is used for packing bottles, between the sheets containing the plants. This hint may be good, even with the ordinary mode of drying.

A CONVENIENT host and habitat index of Australian fungi has been prepared by N. A. Cobb, government botanist of New South Wales. It is based upon M. C. Cooke's "Australian Fungi," and makes a pamphlet of 44 pages.

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[1] DENNIS, DAVID W.—Biology: syllabus of a course of ten lecture-studies. Earlham College: Department of University Extension, No. 3. [Richmond, Ind.]. 8vo. 20 pp., 10 cts.

[2] Separate from Botanisch Jaarboek **6**: 1–23, *pl.* 1. 1894.